Chapter 173-22 WAC

ADOPTION OF DESIGNATIONS OF SHORELANDS AND WETLANDS ASSOCIATED WITH SHORELINES OF THE STATE

WAC

DISPOSITION OF SECTIONS FORMERLY CODIFIED IN THIS CHAPTER

173-22-015 Relationship to National Coastal Zone Management Act of 1972. [Order DE 73-11, § 173-22-015, filed 7/20/73.] Repealed by 97-04-076 (Order 96-12), filed 2/5/97, effective 3/8/97. Statutory Authority: RCW 90.58.140(3) and [90.58].200.

Reviser's note: Order 73-24, filed 8/28/73 amends maps of wetlands associated with shorelines of the state of Washington and is to be used in conjunction with Administrative Order 73-11, filed 7/20/73. Sections within this chapter will show this date where applicable. The maps are listed by county and are entitled "Shoreline Management Act of 1971, chapter 90.58 RCW amendment to the wetland designations of the state of Washington—chapter 173-22 WAC—Department of ecology—September 1973."

Order DE 77-18, filed 9/20/77 amends chapter 173-22 WAC, regarding designations of associated wetlands which constitute shorelines of the state and are subject to the Shoreline Management Act of 1971 as defined by RCW 90.58.030 (c), (d), (e), (f) and (g).

Order DE 78-15, filed 8/15/78 designating associated wetlands in San Juan County, consists of maps omitted from publication in the Washington Administrative Code under the authority of RCW 34.04.050(3) as being unduly cumbersome to publish. Copies of the maps may be obtained from the Department of Ecology, St. Martin's College, Lacey, Washington 98504.

WAC 173-22-010 Purpose. Pursuant to RCW 90.58.030 (2)(f), the department of ecology herein designates the wetland areas associated with the streams, lakes and tidal waters which are subject to the provisions of chapter 90.58 RCW.

[Order DE 72-15, § 173-22-010, filed 6/30/72.]

WAC 173-22-020 Applicability. The provisions of this chapter shall apply state wide.

[Order DE 72-15, § 173-22-020, filed 6/30/72.]

WAC 173-22-030 Definitions. As used herein, the following words have the following meanings:

(1) "Associated wetlands" means those wetlands which are in proximity to and either influence or are influenced by tidal waters or a lake or stream subject to the Shoreline Management Act;

(2) "Atypical situation" as used herein, refers to areas in which one or more parameters (vegetation, soil, and/or hydrology) have been sufficiently altered by recent human activities or natural events to preclude the presence of wetland indicators of the parameter. Recent refers to the period of time since legal jurisdiction of an applicable law or regulation took effect;

(3) "Duration (inundation/soil saturation)" means the length of time during which water stands at or above the soil surface (inundation), or during which the soil is saturated. As used herein, duration refers to a period during the growing season;

(4) "Flood plain" is synonymous with one hundred-year floodplain and means that land area susceptible to being inundated by stream derived waters with a one percent chance of being equaled or exceeded in any given year. The limit of this area shall be based upon flood ordinance regulation maps or a reasonable method which meets the objectives of the act;

(5) "Floodway" means those portions of the area of a river valley lying streamward from the outer limits of a watercourse upon which flood waters are carried during periods of flooding that occur with reasonable regularity, although not necessarily annually, said floodway being identified, under normal condition, by changes in surface soil conditions or changes in types or quality of vegetative ground cover condition. The floodway shall not include those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state. The limit of the floodway is that which has been established in flood regulation ordinance maps or by a reasonable method which meets the objectives of the act;

(6) "Growing season" means the portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biologic zero (5°C);

(7) "Hydrophytic vegetation" means the sum total of macrophytic plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content. When hydrophytic vegetation comprises a community where indicators of hydric soils and wetland hydrology also occur, the area has wetland vegetation;

(8) "Hydric soil" means soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part;

(9) "Lake" means a body of standing water in a depression of land or expanded part of a river, including reservoirs, of twenty acres or greater in total area. A lake is bounded by the ordinary high water mark or, where a stream enters a lake, the extension of the elevation of the lake's ordinary high water mark within the stream;

(10) "Long duration" means a period of inundation from a single event that ranges from seven days to one month.

(11) "Ordinary high water mark" on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department. The following criteria clarify this mark on tidal waters, lakes, and streams:

(a) Tidal waters.

(i) In high energy environments where the action of waves or currents is sufficient to prevent vegetation establishment below mean higher high tide, the ordinary high water mark is coincident with the line of vegetation. Where there is no vegetative cover for less than one hundred feet parallel to the shoreline, the ordinary high water mark is the average tidal elevation of the adjacent lines of vegetation. Where the ordinary high water mark cannot be found, it is the elevation of mean higher high tide;

(ii) In low energy environments where the action of waves and currents is not sufficient to prevent vegetation establishment below mean higher high tide, the ordinary high water mark is coincident with the landward limit of salt tolerant vegetation. "Salt tolerant vegetation" means vegetation which is tolerant of interstitial soil salinities greater than or equal to 0.5 parts per thousand;

(b) Lakes. Where the ordinary high water mark cannot be found, it shall be the line of mean high water;

(c) Streams. Where the ordinary high water mark cannot be found, it shall be the line of mean high water. For braided streams, the ordinary high water mark is found on the banks forming the outer limits of the depression within which the braiding occurs;

(12) "Prevalent vegetation" means the plant community or communities that occur in an area during a given period. The prevalent vegetation is characterized by the dominant macrophytic species that comprise the plant community;

(13) "River delta" means those lands formed as an aggradational feature by stratified clay, silt, sand and gravel deposited at the mouths of streams where they enter a quieter body of water. The upstream extent of a river delta is that limit where it no longer forms distributary channels;

(14) "Shorelands" or "shoreland areas" means those lands extending landward for two hundred feet in all directions as measured on a horizontal plane from the ordinary high water mark; floodways and contiguous floodplain areas landward two hundred feet from such floodways; and all wetlands and river deltas associated with the streams, lakes, and tidal waters which are subject to the provisions of this chapter; the same to be designated as to location by the department of ecology. Any county or city may determine that portion of a one-hundred-year-flood plain to be included in its master program as long as such portion includes, as a minimum, the floodway and the adjacent land extending landward two hundred feet therefrom;

(15) A "stream" is a naturally occurring body of periodic or continuously flowing water where:

(a) The mean annual flow is greater than twenty cubic feet per second; and

(b) The water is contained within a channel. A channel is an open conduit either naturally or artificially created. This definition does not include artificially created irrigation, return flow, or stockwatering channels;

(16) "Tidal water" includes marine and estuarine waters bounded by the ordinary high water mark. Where a stream enters the tidal water, the tidal water is bounded by the extension of the elevation of the marine ordinary high water mark within the stream;

(17) "Typically adapted" is a term that refers to a species being normally or commonly suited to a given set of environmental conditions, due to some feature of its morphology, physiology, or reproduction;

(18) "Very long duration" means a period of inundation from a single event that is greater than one month.

(19) "Wetlands" or "wetland areas" means areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs and similar areas. Wetlands do not include those artificial wetlands intentionally created from nonwetland sites, including, but not limited to, irrigation and drainage ditches, grass-lined swales, canals, detention facilities, wastewater treatment facilities, farm ponds, and landscape amenities, or those wetlands created after July 1, 1990, that were unintentionally created as a result of the construction

of a road, street, or highway. Wetlands may include those artificial wetlands intentionally created from nonwetland areas to mitigate the conversion of wetlands; and

(20) The definitions set forth in chapter 90.58 RCW shall also apply as used herein.

[Statutory Authority: RCW 90.58.140(3) and [90.58].200. 97-04-076 (Order 96-12), § 173-22-030, filed 2/5/97, effective 3/8/97. Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-030, filed 5/23/86. Statutory Authority: RCW 90.58.030 (2)(f), 90.58.120, and 90.58.200. 80-08-086 (Order DE 80-22), § 173-22-030, filed 7/2/80; Order DE 73-11, § 173-22-030, filed 7/20/73; Order DE 72-15, § 173-22-030, filed 6/30/72.]

WAC 173-22-035 Wetland identification and delineation. Identification of wetlands and delineation of their boundaries pursuant to this chapter shall be done in accordance with the criteria and indicators listed in WAC 173-22-080. These criteria and indicators along with recommended methods and additional background information can be found in the Washington State Wetland Identification and Delineation Manual, Ecology Publication # 96-94.

[Statutory Authority: RCW 90.58.140(3) and [90.58].200. 97-04-076 (Order 96-12), § 173-22-035, filed 2/5/97, effective 3/8/97.]

WAC 173-22-040 Shoreland area designation criteria. The following criteria contain the standards for the department's designation of shoreland areas associated with shorelines of the state which are subject to the jurisdiction of chapter 90.58 RCW:

(1) Tidal waters. The shoreland area shall include:

(a) Those lands which extend landward two hundred feet as measured on a horizontal plane from the ordinary high water mark; and

(b) Those wetlands which are in proximity to and either influence or are influenced by the tidal water. This influence includes but is not limited to one or more of the following: Periodic tidal inundation; hydraulic continuity; formation by tidally influenced geohydraulic processes; or a surface connection through a culvert or tide gate;

(2) Lakes. The shoreland area shall include:

(a) Those lands which extend landward two hundred feet as measured on a horizontal plane from the ordinary high water mark; and

(b) Those wetlands which are in proximity to and either influence or are influenced by the lake. This influence includes but is not limited to one or more of the following: Periodic inundation or hydraulic continuity;

(3) Streams. The shoreland area shall include the greater of:

(a) Those lands which extend landward two hundred feet as measured on a horizontal plane from the ordinary high water mark;

(b) Those floodplains which extend landward two hundred feet as measured on a horizontal plane from the floodway: *Provided,* That local government may, at its discretion, include all or a larger portion of the one hundred-year floodplain within the associated shorelands. Designation of this shoreland area shall be in accordance with chapter 173-19 WAC, the state master program. If the applicable master program does not designate the shoreland area for a stream, it shall be designated under the rules which applied at the time of adoption by the department;

(c) Those wetlands which are in proximity to and either influence or are influenced by the stream. This influence includes but is not limited to one or more of the following: Periodic inundation; location within a floodplain; or hydraulic continuity; and

(d) Those lands within a river delta floodplain except for those lands that can reasonably be expected to be protected from flood waters by flood control devices maintained by or maintained under license from the federal government, the state, or a political subdivision of the state.

[Statutory Authority: RCW 90.58.140(3) and [90.58].200. 97-04-076 (Order 96-12), § 173-22-040, filed 2/5/97, effective 3/8/97. Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-040, filed 5/23/86. Statutory Authority: RCW 90.58.030, 90.58.120 and 90.58.200. 85-09-043 (Order DE 85-05), § 173-22-040, filed 4/15/85. Statutory Authority: RCW 90.58.030 (2)(f), 90.58.120, and 90.58.200. 80-08-086 (Order DE 80-22), § 173-22-040, filed 7/2/80; Order DE 76-30, § 173-22-040, filed 7/27/76; Order DE 73-11, § 173-22-040, filed 7/20/73; Order DE 72-15, § 173-22-040, filed 6/30/72.]

WAC 173-22-050 Review of designations. The department shall review all the designations made herein at least once in every five-year period following the effective date of chapter 90.58 RCW or as frequently as is deemed advisable by the department, and prepare the necessary revisions to ensure that the

designations conform to the policies of chapter 90.58 RCW and of chapter 173-22 WAC in the manner and form prescribed for adopting and amending rules and regulations in chapter 34.04 RCW (the Administrative Procedure Act).

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-050, filed 5/23/86. Statutory Authority: RCW 90.58.030 (2)(f), 90.58.120, and 90.58.200. 80-08-086 (Order DE 80-22), § 173-22-050, filed 7/2/80; Order DE 73-11, § 173-22-050, filed 7/20/73; Order DE 72-15, § 173-22-050, filed 6/30/72.]

WAC 173-22-052 Alterations of shorelines affecting designations. Alterations of the existing conditions of shorelines and wetlands of the state which affect the boundary or volume of those water bodies, whether through authorized development or natural causes, shall warrant a review of the designation of those shorelines and their associated wetlands.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-052, filed 5/23/86.]

WAC 173-22-055 Conflicts between designations and criteria. In the event that any of the wetland designations shown on the maps adopted in WAC 173-22-060 conflict with the criteria set forth in this chapter the criteria shall control. The boundary of the designated wetland areas shall be governed by the criteria set forth in WAC 173-22-040.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-055, filed 5/23/86. Statutory Authority: RCW 90.58.030 (2)(f), 90.58.120, and 90.58.200. 80-08-086 (Order DE 80-22), § 173-22-055, filed 7/2/80; Order DE 73-11, § 173-22-055, filed 7/20/73.]

WAC 173-22-060 Shoreline designation maps. Shoreline designation maps are those maps which have been prepared and adopted by the department in a manner consistent with chapter 34.04 RCW (the Administrative Procedure Act) that designate the location of shorelines of the state and their associated wetland areas. Wetland designations are applied under the criteria contained in WAC 173-22-040. Due to the bulk of the maps designating the wetland areas, they are not included in the text of this chapter, but rather are incorporated herein as an appendix hereto, having full legal force and effect as if published herein. Copies of the appendix are available to the public at all reasonable times for inspection in the headquarters of the department of ecology in Olympia, the Washington state code reviser's office, the appropriate county auditor and city clerk. Copies of portions thereof, or of the complete set, will be available from the department at the expense of the party requesting the same. Volumes I, II, and III entitled *Shorelines under the Shoreline Management Act of 1971* (chapter 90.58 RCW, chapter 286, Laws of 1971 1st ex. sess.) were adopted by reference on June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-060, filed 5/23/86. Statutory Authority: RCW 90.58.030, 90.58.120 and 90.58.200. 85-14-001 (Order 85-15), § 173-22-060, filed 6/20/85; 85-09-043 (Order DE 85-05), § 173-22-060, filed 4/15/85. Statutory Authority: RCW 90.58.120, 90.58.200 and 90.58.030 (2)(f). 81-13-034 (Order DE 81-18), § 173-22-060, filed 6/15/81; Order DE 72-15, § 173-22-060, filed 6/30/72.]

WAC 173-22-0602 Adams County. Adams County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0602, filed 5/23/86.]

WAC 173-22-0604 Asotin County. Asotin County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0604, filed 5/23/86.]

WAC 173-22-0606 Benton County. Benton County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0606, filed 5/23/86.]

WAC 173-22-0608 Chelan County. Chelan County designation maps approved June 30, 1972. Revision approved August 28, 1973.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0608, filed 5/23/86.]

WAC 173-22-0610 Clallam County. Clallam County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved April 15, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0610, filed 5/23/86.]

WAC 173-22-0612 Clark County. Clark County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0612, filed 5/23/86.]

WAC 173-22-0614 Columbia County. Columbia County designation maps approved June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0614, filed 5/23/86.]

WAC 173-22-0616 Cowlitz County. Cowlitz County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0616, filed 5/23/86.]

WAC 173-22-0618 Douglas County. Douglas County designation maps approved June 30, 1972. Revision approved August 28, 1973.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0618, filed 5/23/86.]

WAC 173-22-0620 Ferry County. Ferry County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0620, filed 5/23/86.]

WAC 173-22-0622 Franklin County. Franklin County designation maps approved June 30, 1972. Revision approved August 28, 1973.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0622, filed 5/23/86.]

WAC 173-22-0624 Garfield County. Garfield County designation maps approved June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0624, filed 5/23/86.]

WAC 173-22-0626 Grant County. Grant County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved June 15, 1981.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0626, filed 5/23/86.]

WAC 173-22-0628 Grays Harbor County. Grays Harbor County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved July 2, 1980. Revision approved April 15, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0628, filed 5/23/86.]

WAC 173-22-0630 Island County. Island County designation maps approved June 30, 1972. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0630, filed 5/23/86.]

WAC 173-22-0632 Jefferson County. Jefferson County designation maps approved June 30, 1972. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0632, filed 5/23/86.]

WAC 173-22-0634 King County. King County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980. Revision approved June 15, 1981. Revision approved April 15, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0634, filed 5/23/86.]

WAC 173-22-0636 Kitsap County. Kitsap County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980. Revision approved June 15, 1981.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0636, filed 5/23/86.]

WAC 173-22-0638 Kittitas County. Kittitas County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0638, filed 5/23/86.]

WAC 173-22-0640 Klickitat County. Klickitat County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0640, filed 5/23/86.]

WAC 173-22-0642 Lewis County. Lewis County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0642, filed 5/23/86.]

WAC 173-22-0644 Lincoln County. Lincoln County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0644, filed 5/23/86.]

WAC 173-22-0646 Mason County. Mason County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0646, filed 5/23/86.]

WAC 173-22-0648 Okanogan County. Okanogan County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved September 29, 1987. Revision approved January 5, 1988.

[Statutory Authority: RCW 90.58.120 and 90.58.200. 88-03-070 (Order DE 87-45), § 173-22-0648, filed 1/20/88. Statutory Authority: RCW 90.58.030, 90.58.120 and 90.58.300. 87-20-050 (Order DE 87-35), § 173-22-0648, filed 10/2/87. Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0648, filed 5/23/86.]

WAC 173-22-0650 Pacific County. Pacific County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0650, filed 5/23/86.]

WAC 173-22-0652 Pend Oreille County. Pend Oreille County designation maps approved June 30, 1972. Revision approved April 15, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0652, filed 5/23/86.]

WAC 173-22-0654 Pierce County. Pierce County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0654, filed 5/23/86.]

WAC 173-22-0656 San Juan County. San Juan County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved August 15, 1978. Revision approved July 2, 1980. Revision approved June 20, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0656, filed 5/23/86.]

WAC 173-22-0658 Skagit County. Skagit County designation maps approved June 30, 1972. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0658, filed 5/23/86.]

WAC 173-22-0660 Skamania County. Skamania County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0660, filed 5/23/86.]

WAC 173-22-0662 Snohomish County. Snohomish County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0662, filed 5/23/86.]

WAC 173-22-0664 Spokane County. Spokane County designation maps approved June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0664, filed 5/23/86.]

WAC 173-22-0666 Stevens County. Stevens County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0666, filed 5/23/86.]

WAC 173-22-0668 Thurston County. Thurston County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980. Revision approved April 15, 1985.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0668, filed 5/23/86.]

WAC 173-22-0670 Wahkiakum County. Wahkiakum County designation maps approved June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0670, filed 5/23/86.]

WAC 173-22-0672 Walla Walla County. Walla Walla County designation maps approved June 30, 1972. Revision approved September 20, 1977.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0672, filed 5/23/86.]

WAC 173-22-0674 Whatcom County. Whatcom County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0674, filed 5/23/86.]

WAC 173-22-0676 Whitman County. Whitman County designation maps approved June 30, 1972.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0676, filed 5/23/86.]

WAC 173-22-0678 Yakima County. Yakima County designation maps approved June 30, 1972. Revision approved August 28, 1973. Revision approved September 20, 1977. Revision approved July 2, 1980.

[Statutory Authority: Chapter 90.58 RCW. 86-12-011 (Order 86-06), § 173-22-0678, filed 5/23/86.]

WAC 173-22-070 Lands within federal boundaries. In addition to those designations contained in the appendix, those nonfederal lands lying within the exterior boundaries of federal lands and those federal lands leased by the federal government to other persons, which lands fall within the definition of shorelands contained herein, shall also be subject to the jurisdiction of chapter 90.58 RCW.

[Statutory Authority: RCW 90.58.140(3) and [90.58].200. 97-04-076 (Order 96-12), § 173-22-070, filed 2/5/97, effective 3/8/97; Order DE 73-11, § 173-22-070, filed 7/20/73; Order DE 72-15, § 173-22-070, filed 6/30/72.]

WAC 173-22-080 Wetland delineation manual. The department has prepared a Washington State Wetland Identification and Delineation Manual (Ecology publication # 96-94) to be used in implementing these regulations. The mandatory portions of this manual are adopted into the following regulations. In addition, the manual contains background information, guidance, examples, and methods which may be

useful in applying these regulations. The manual is intended to be used in implementing the Shoreline Management Act and other applicable state statutes. The manual is also to be used by local governments in implementing local regulations under the Growth Management Act (chapter 36.70A RCW).

The state manual takes the original 1987 Corps of Engineers manual and incorporates the changes made by the federal government to the 1987 manual since that time. This includes the national guidance issued by the Corps in 1991 and 1992, and the regional guidance issued by the Corps and EPA in 1994. All other changes are of two types:

Additional language added to assist the user in applying the manual to the variety of situations found in the state of Washington; or

Deletion of geographic material or references irrelevant to Washington.

Since the original 1987 manual was developed for use throughout the United States, it contains many references that do not apply to our state. Where appropriate, references to species or situations found in Washington have been added.

(1) Wetland delineation. Purpose and introduction.

It is the purpose of a delineation manual to provide information and methods that will allow a delineator to make an accurate wetland delineation at any time of the year. However, it must be recognized that some wetlands will be more difficult to delineate than others and that all information collected must be used in conjunction with the knowledge and experience of the delineator. The proper collection and recording of field and other supporting data is one of the most critical aspects of any wetland delineation. The wetland delineation regulations are intended to identify areas that meet the definition of wetlands found in state law. They are also intended to identify the same areas identified in the Corps of Engineers 1987 Wetlands Delineation Manual, as amended and augmented by official federal guidance issued through January 1995.

The technical approach for identifying and delineating wetlands does not constitute a classification system. It provides a basis for determining whether a given area is a wetland for purposes of federal, state and local regulations without attempting to classify it by wetland type.

Certain wetland types, under the extremes of normal seasonal or annual variability, may not always meet all the wetland criteria defined in the manual. Examples include vernal wetlands during drought years and seasonal wetlands that may lack hydrophytic vegetation and/or wetland hydrology during the dry season. Such areas are discussed in subsection (12) of this section **(Problem Areas)**, and guidance is provided for making wetland determinations in these areas.

Three key provisions of the definition of wetlands include:

(a) Inundated or saturated soil conditions resulting from permanent or periodic inundation or saturation by ground water or surface water.

(b) A prevalence of vegetation typically adapted for life in saturated soil conditions (hydrophytic vegetation).

(c) The presence of "normal circumstances."

Explicit in the definition is the consideration of three environmental parameters: Hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. Although vegetation is often the most readily observed parameter, sole reliance on vegetation or either of the other parameters as the determinant of wetlands can sometimes be misleading. Many plant species can grow successfully in both wetlands and nonwetlands, and hydrophytic vegetation and hydric soils may persist for decades following alteration of hydrology that will render an area a nonwetland. The presence of hydric soils and wetland hydrology indicators in addition to vegetation indicators will provide a logical, easily defensible, and technical basis for the presence of wetlands. The combined use of indicators for all three parameters will enhance the technical accuracy, consistency, and credibility of wetland determinations. Therefore, all three parameters were used in developing the criteria for wetlands and all approaches for applying the criteria embody the multiparameter concept.

The procedures described in the methods section of the state delineation manual have been tested and found to be reliable. However, these methods are recommendations and are not mandatory. Site-specific conditions may require modification of field procedures. The user has the flexibility to employ sampling procedures other than those described. However, the basic approach for making wetland determinations should not be altered (i.e., the determination should be based on the dominant plant species, soil characteristics, and hydrologic characteristics of the area in question). The user should document reasons for using a different characterization procedure than described in the state manual. *CAUTION: Application of*

methods described in the manual or the modified sampling procedures requires that the user be familiar with wetlands of the area and use his/her training, experience, and good judgment in making wetland determinations.

(2) Wetland identification and delineation. Technical criteria. The interaction of hydrology, vegetation, and soil results in the development of characteristics unique to wetlands. Therefore, the following criteria for wetlands are based on these three parameters.

The definition of wetlands (WAC 173-22-030) includes the language found in the federal Clean Water Act regulations. It also includes additional language found in the Shoreline Management Act and Growth Management Act which specifically excludes several types of "artificial" wetlands. Many of these areas specifically excluded in the definition will meet the technical requirements for being a wetland (i.e., will meet all three criteria). The delineation manual identifies all areas that meet the necessary wetland criteria and does not attempt to distinguish these "artificial" wetlands. If necessary, the user will need to independently determine if a wetland as identified by this manual fits in any of the categories of "artificial" wetlands specifically excluded in the definition.

(3) The following criteria, and technical approach comprise the basis for the identification and delineation of wetlands:

Wetlands meet the following criteria:

(a) Vegetation. The prevalent vegetation consists of macrophytes that are typically adapted to areas having hydrologic and soil conditions described in subsection (1)(a) of this section. Hydrophytic species, due to morphological, physiological, and/or reproductive adaptation(s), have the ability to grow, effectively compete, reproduce, and/or persist in anaerobic soil conditions. Indicators of vegetation associated with wetlands are listed in this section.

(b) Soil. A hydric soil is a soil that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part. (USDA-NRCS 1995, Federal Register, 7/13/94, Vol. 59, No. 133, pp 35680-83.) The following criteria reflect those soils that meet this definition:

(i) All Histosols except Folists; or

(ii) Soils in Aquic suborders, great groups, or subgroups, Albolls suborder, Aquisalids, Pachic subgroups, or Cumulic subgroups that are:

(A) Somewhat poorly drained with a water table equal to 0.0 foot (ft.) from the surface during the growing season; or

(B) Poorly drained or very poorly drained and have either:

(I) A water table equal to 0.0 ft. during the growing season if textures are coarse sand, sand, or fine sand in all layers within 20 inches(in.), or for other soils;

(II) A water table at less than or equal to 0.5 ft. from the surface during the growing season if permeability is equal to or greater than 6.0 in./hour in all layers within 20 in.; or

(III) The water table is at less than or equal to 1.0 ft. from the surface during the growing season if permeability is less than 6.0 in./hour in any layer within 20 in.; or

(iii) Soils that are frequently ponded for long or very long duration during the growing season; or

(iv) Soils that are frequently flooded for long duration or very long duration during the growing season.

Soil criteria indicators are listed in subsections (6), (7) and (8) of this section.

(c) Hydrology. Areas which are inundated and/or saturated to the surface for a consecutive number of days for more than 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated to the surface for a consecutive number of days between 5 percent and 12.5 percent of the growing season in most years may or may not be wetlands. Areas inundated or saturated to the surface for less than 5 percent of the growing season are nonwetlands. Wetland hydrology exists if field indicators are present as described in subsection (10) of this section.

(d) Technical approach for the identification and delineation of wetlands. Except in certain situations defined in this manual, evidence of at least one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination.

Characteristics and Indicators of Hydrophytic Vegetation, Hydric Soils, and Wetland Hydrology

(4) Hydrophytic vegetation. The plant community concept is followed throughout the manual. Emphasis is placed on the assemblage of plant species that exert a controlling influence on the character of the

plant community, rather than on indicator species. Thus, the presence of scattered individuals of an upland plant species in a community dominated by hydrophytic species is not a sufficient basis for concluding that the area is an upland community. Likewise, the presence of a few individuals of a hydrophytic species in a community dominated by upland species is not a sufficient basis for concluding that the area has hydrophytic vegetation.

(5) Indicators of hydrophytic vegetation. Several indicators may be used to determine whether hydrophytic vegetation is present on a site. However, the presence of a single individual of a hydrophytic species does not mean that hydrophytic vegetation is present. The strongest case for the presence of hydrophytic vegetation can be made when several indicators, such as those in the following list, are present. One of the most common errors made in delineating wetlands has been to assume that the first indicator (a) must be met in every case. This has led to some wetland areas being called nonwetland. Keep in mind that any of the following indicators may be used to meet the vegetation criteria. However, when using any indicator other than (a), it is important to have solid documentation of wetland hydrology and hydric soils. Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached.

(a) More than 50 percent of the dominant species are OBL, FACW+, FACW, FACW-, FAC+ or FAC (Table 1) on lists of plant species that occur in wetlands. A national interagency panel has prepared a National List of Plant Species that Occur in Wetlands (Reed 1988a). This list categorizes species according to their affinity for occurrence in wetlands. In addition, a 1993 supplement to the plants species list for Region 9 (Northwest) has been prepared (Reed 1993). Be sure to consult this supplement or any more recent supplements to confirm that a species has the proper indicator status. (The Seattle District of the Corps does not use the FAC neutral option as an indicator of hydrophytic vegetation but does allow the use of the FAC neutral option as an indicator of hydrology. See Hydrology indicator # 10 for definition.) FAC- species do not count as FAC species for the purposes of meeting indicator (a). Only FAC, FAC+, FACW (+, -) and OBL species count.

Table 1
Plant Indicator Status Categories

Indicator Category	Indicator Symbol	Definition
OBLIGATE WETLAND PLANTS	OBL	Plants that almost always occur (estimated probability >99%) in wetlands under natural conditions, but which may also occur rarely (estimated probability <1%) in nonwetlands. Examples: *Typha latifolia, Lysichitum americanum*
FACULTATIVE WETLAND PLANTS	FACW	Plants that usually occur (estimated probability 67% to 99%) in wetlands, but also occur (estimated probability 1% to 33% in nonwetlands). Examples: *Fraxinus latifolia Cornus stolonifera.*
FACULTATIVE PLANTS	FAC	Plants with a similar likelihood (estimated probability 34% to 66%) of occurring in both wetlands and nonwetlands. Examples: *Alnus rubra, Rubus spectabilis*
FACULTATIVE UPLAND PLANTS	FACU	Plants that sometimes occur (estimated probability 1% to 33%) in wetlands, but occur more often (estimated probability 67% to 99%) in nonwetlands. Examples: *Acer macrophyllum, Rubus discolor*
OBLIGATE UPLAND PLANTS	UPL	Plants that rarely occur (estimated probability <1%) in wetlands, but occur almost always (estimated probability >99%) in nonwetlands under natural conditions.

Categories were originally developed and defined by the USFWS National Wetlands Inventory and subsequently modified by the National Plant List Panel. The three facultative categories are subdivided by (+) and (-) modifiers. FAC+ species are considered to have a greater estimated probability of occurring in wetlands than FAC species, while FAC- species are considered to have a lesser estimated probability of occurring in wetlands than FAC species.

(b) Other indicators. Although there are several other indicators of hydrophytic vegetation, it will seldom be necessary to use them. However, they may provide additional useful information to strengthen a

case for the presence of hydrophytic vegetation. Additional training and/or experience may be required to employ these indicators.

(i) Visual observation of plant species growing in areas of prolonged inundation and/or soil saturation. This indicator can only be applied by experienced personnel who have accumulated information through several years of field experience and written documentation (field notes) that certain species commonly occur in areas of prolonged (>12.5 percent) inundation and/or soil saturation during the growing season. In certain situations, areas with wetland hydrology and hydric soils may be dominated by plant species classified as facultative upland. The most common examples in Washington are Western Hemlock forested wetlands and wet meadows planted with pasture grasses. It is important to keep in mind that facultative upland species are found in wetlands up to 33% of the time and, under certain circumstances, can be the dominant species in a wetland plant community. Usually, however, FACU species are found in uplands. Thus, if you encounter a situation where the hydrology and soil parameters are clearly met, do not eliminate the area from consideration as a wetland based on a lack of prevalence of facultative or wetter vegetation. Species such as *Gaultheria shallon, Acer circinatum,*and *Pteridium aquilinum* may be found in these areas, often on hummocks or downed logs or stumps. More typical wetland species may occur in such areas, though often as nondominants. Thus, occurrence of species commonly observed in other wetland areas provides a strong indication that hydrophytic vegetation is present. If you have strong evidence that the hydrology and soil parameters are met then the vegetation is acting as a hydrophyte and the area is probably a wetland. *CAUTION: It is necessary to have good documentation that the area experiences prolonged inundation and/or saturation in order to call it a wetland. The presence of standing water or saturated soil on a site at a single point in time or for short periods is insufficient evidence that the species present are able to tolerate long periods of inundation. The user must relate the observed species to other similar situations and determine whether they are normally found in wet areas, taking into consideration the season and immediately preceding weather conditions. If you encounter this situation, you may be dealing with an atypical situation or a problem area.*

(ii) Morphological adaptations. Some hydrophytic species have easily recognized physical characteristics that indicate their ability to occur in wetlands. A given species may exhibit several of these characteristics, but not all hydrophytic species have evident morphological adaptations.

(iii) Technical literature. The technical literature may provide a strong indication that plant species comprising the prevalent vegetation are commonly found in areas where soils are periodically saturated for long periods. Sources of available literature include:

(A) Taxonomic references. Such references usually contain at least a general description of the habitat in which a species occurs. A habitat description such as, "Occurs in water of streams and lakes and in alluvial floodplains subject to periodic flooding," supports a conclusion that the species typically occurs in wetlands.

(B) Botanical journals. Some botanical journals contain studies that define species occurrence in various hydrologic regimes.

(C) Technical reports. Governmental agencies periodically publish reports (e.g., literature reviews) that contain information on plant species occurrence in relation to hydrologic regimes.

(D) Technical workshops, conferences, and symposia. Publications resulting from periodic scientific meetings contain valuable information that can be used to support a decision regarding the presence of hydrophytic vegetation. These usually address specific regions or wetland types.

(E) Wetland plant data base. The National Wetland Inventory has produced a Plant Data Base that contains habitat information on over 6,700 plant species that occur at some estimated probability in wetlands, as compiled from the technical literature.

(iv) Physiological adaptations. Physiological adaptations include any features of the metabolic processes of plants that make them particularly fitted for life in saturated soil conditions. *NOTE: It is impossible to detect the presence of physiological adaptations in plant species during on-site visits.*

(v) Reproductive adaptations. Some plant species have reproductive features that enable them to become established and grow in saturated soil conditions.

(6) Hydric soils. Indicators. Indicators are listed in descending order of reliability. Although all are valid indicators, some are stronger indicators than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached.

A hydric soil may be either drained or undrained, and a drained hydric soil may not continue to support hydrophytic vegetation. Therefore, not all areas having hydric soils will qualify as wetlands. Only when a hydric soil supports hydrophytic vegetation and the area has indicators of wetland hydrology may the area be referred to as a wetland.

A drained hydric soil is one in which sufficient ground or surface water has been removed by artificial means such that the area will no longer support hydrophytic vegetation or wetland hydrology. On-site evidence of drained soils includes:

(a) Presence of ditches or canals of sufficient depth to lower the water table below the major portion of the root zone of the prevalent vegetation.

(b) Presence of dikes, levees, or similar structures that obstruct normal inundation of an area.

(c) Presence of a tile system to promote subsurface drainage.

(d) Diversion of upland surface run-off from an area.

Although it is important to record such evidence of drainage of an area, a hydric soil that has been drained or partially drained still allows the soil parameter to be met. However, the area will not qualify as a wetland if the degree of drainage has been sufficient to preclude the presence of either hydrophytic vegetation or a hydrologic regime that occurs in wetlands. *NOTE: The mere presence of drainage structures in an area is not sufficient basis for concluding that a hydric soil has been drained; such areas may continue to have wetland hydrology.*

(7) Indicators of hydric soils (nonsandy soils). Several indicators are available for determining whether a given soil meets the definition and criteria for hydric soils. Any one of the following indicates that hydric soils are present.

(a) Organic soils (Histosols). As a general rule, a soil is an organic soil when:

(i) More than 50 percent (by volume) of the upper 32 inches of soil is composed of organic soil material; or

(ii) Organic soil material of any thickness rests on bedrock. Organic soils are saturated for long periods and are commonly called peats or mucks.

(b) Histic epipedons. A histic epipedon is an 8-inch to 16-inch layer at or near the surface of a mineral hydric soil that is saturated with water for 30 consecutive days or more in most years and contains a minimum of 20 percent organic matter when no clay is present or a minimum of 30 percent organic matter when clay content is 60 percent or greater. Soils with histic epipedons are inundated or saturated for sufficient periods to greatly retard aerobic decomposition of the organic surface, and are considered to be hydric soils.

(c) Sulfidic material. When mineral soils emit an odor of rotten eggs, hydrogen sulfide is present. Such odors are only detected in soils that are permanently saturated and have sulfidic material within a few centimeters of the soil surface. Sulfides are produced only in a reducing environment.

(d) Aquic or peraquic moisture regime. An aquic moisture regime is a reducing one; i.e., it is virtually free of dissolved oxygen because the soil is saturated by ground water or by water of the capillary fringe. Because dissolved oxygen is removed from ground water by respiration of microorganisms, roots, and soil fauna, it is also implicit that the soil temperature is above biologic zero (41°F at 20 inches) at the same time the soil is saturated. Soils with peraquic moisture regimes are characterized by the presence of ground water which is always at or near the soil surface and exhibits reducing conditions. Examples include soils of tidal marshes and soils of closed, landlocked depressions that are fed by permanent streams.

(e) Reducing soil conditions. Soils saturated for long or very long duration will usually exhibit reducing conditions. Under such conditions, ions of iron are transformed (reduced) from a ferric valence state (Fe^{3+}) to a ferrous valence state (Fe^{2+}). This condition can often be detected in the field by a ferrous iron test. A simple colorimetric field test kit has been developed for this purpose. When a soil extract changes to a pink color upon addition of alpha-alpha-dipyridil, ferrous iron is present, which indicates a reducing soil environment. *NOTE: This test cannot be used in mineral hydric soils having low iron content, organic soils, and soils that have been desaturated for significant periods of the growing season. Caution: This test can only be used as a positive indicator of reducing conditions and it is only effective if it is done at the time that a mineral soil is actively reducing. While the presence of a reaction indicates anaerobic conditions, the lack of a reaction does not indicate a lack of anaerobic conditions.*

(f) Soil colors. The colors of various soil components are often the most diagnostic indicator of hydric soils. Colors of these components are strongly influenced by the frequency and duration of soil saturation,

which leads to reducing soil conditions. Mineral hydric soils will be either gleyed or will have contrasting mottles and/or low chroma matrix. These are discussed below:

NOTE: Soil terminology is undergoing constant change, and terms such as "mottles" and "low chroma colors" are being replaced with the term "redoximorphic features." In order to retain consistency with the Corps 1987 Manual, the older terms are used below.

(i) Gleyed soils (gray colors). Gleyed soils develop when anaerobic soil conditions result in pronounced chemical reduction of iron, manganese, and other elements, thereby producing gray soil colors. Anaerobic conditions that occur in waterlogged soils result in the predominance of reduction processes, and such soils are greatly reduced. Iron is one of the most abundant elements in soils. Under anaerobic conditions, iron in converted from the oxidized (ferric) state to the reduced (ferrous) state, which results in the bluish, greenish, or grayish colors associated with the gleying effect. Gleying immediately below the A-horizon or 10 inches (whichever is shallower) is an indication of a markedly reduced soil, and gleyed soils are hydric soils. Gleyed soil conditions can be determined by using the gley page of the Munsell Color Charts (Munsell Color 1990).

(ii) Soils with contrasting mottles and/or low chroma matrix. Mineral hydric soils that are saturated for substantial periods of the growing season (but not long enough to produce gleyed soils) will either have high chroma mottles and a low chroma matrix or will lack mottles but have a low matrix chroma. Mottled means "marked with spots of contrasting color." Soils that have high chroma mottles and a low chroma matrix are indicative of a fluctuating water table.

NOTE: Hydric soils can also have low chroma mottles that contrast with the matrix color.

The soil matrix is the portion (usually more than 50 percent) of a given soil layer that has the predominant color. Colors should be determined in soils that have been moistened; otherwise, state that colors are for dry soils. Mineral hydric soils usually have one of the following color features in the horizon immediately below the A-horizon or 10 inches (whichever is shallower):

(A) Matrix chroma of 2 or less in mottled soils.

(B) Matrix chroma of 1 or less in unmottled soils.

NOTE: The matrix chroma of some dark (black) mineral hydric soils (e.g., Aquolls) will not conform to the criteria described in (f)(ii)(A) and (B) of this subsection; in such soils, gray mottles occurring at 10 inches or less are indicative of hydric conditions. Mollisols that are not hydric will often still have dark colored surface soils.

CAUTION: Soils with significant coloration due to the nature of the parent material may not exhibit the above characteristics. In such cases, this indicator cannot be used.

(g) Soil appearing on hydric soils list. Using the criteria for hydric soils, the NTCHS has developed a list of hydric soils. Listed soils have reducing conditions for a significant portion of the growing season in a major portion of the root zone and are frequently saturated within 12 inches of the soil surface if they have not been effectively drained. *CAUTION: Do not use this indicator unless you have field verified that the profile description of the mapping unit conforms to that of the sampled soil.*

(h) Iron and manganese concretions. During the oxidation-reduction process, iron and manganese in suspension are sometimes segregated as oxides into concretions, nodules or soft masses. These accumulations are usually black or dark brown. Concretions >2 mm. in diameter occurring within 7.5 cm. of the surface are evidence that the soil is saturated for long periods near the surface.

CAUTION: Concretions may be relict features. Be careful to confirm that the hydrologic conditions that created the concretions still exist before using this indicator.

(8) Additional indicators of hydric soils (for sandy soils). Not all indicators listed above can be applied to sandy soils. In particular, soil color may not be a reliable indicator in most sandy soils. However, three additional soil features may be used as indicators of sandy hydric soils, including:

(a) High organic matter content in the surface horizon. Organic matter tends to accumulate above or in the surface horizon of sandy soils that are inundated or saturated to the surface for a significant portion of the growing season. Prolonged inundation or saturation creates anaerobic conditions that greatly inhibit decomposition (oxidation) of organic matter.

(b) Streaking of subsurface horizons by organic matter. Organic matter is moved downward through sand as the water table fluctuates. This often occurs more rapidly and to a greater degree in some vertical sections of a sandy soil containing a higher content of organic matter than in others. Thus, the sandy soil appears streaked with darker areas. When soil from a darker area is rubbed between the fingers, the organic matter stains the fingers.

(c) Organic pans. As organic matter is moved downward through sandy soils, it tends to accumulate at the point representing the most commonly occurring depth to the water table. This organic matter tends to become slightly cemented with iron and aluminum, forming a thin layer of hardened soil (spodic horizon). These horizons often occur at depths of 12 to 30 inches below the mineral surface. Wet spodic soils usually have thick dark surface horizons that are high in organic matter with dull, gray horizons above the spodic horizon. Generally, the nearer to the surface the spodic horizon, the more likely the soil is hydric.

CAUTION: In recently deposited sandy material (e.g., accreting sandbars), it may be impossible to find any of these indicators. In such cases, consider this a problem area (Entisols).

NOTE: The NRCS developed and published Field Indicators of Hydric Soils in the United States in July 1996. This document includes many useful indicators of hydric soils, however, some hydric soils will lack one of the indicators included in the NRCS document. Therefore, the indicators are only used as positive indicators — if one or more of the indicators is present, the soil is a hydric soil, but the lack of any of these indicators does not mean the soil is nonhydric. In addition, the Corps has not authorized the use of these new field indicators and has stated that while they may be used as additional information, they do not replace the indicators in the 1987 Manual nor may they be used to contradict the 1987 Manual indicators.

(9) Wetland hydrology. The term "wetland hydrology" encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively. Such characteristics are usually present in areas that are inundated or have soils that are saturated to the surface for sufficient duration to develop hydric soils and support vegetation typically adapted for life in periodically anaerobic soil conditions. Hydrology is often the least exact of the parameters, and indicators of wetland hydrology are sometimes difficult to find in the field. However, it is essential to establish that a wetland area is periodically inundated or has saturated soils during the growing season.

It is usually impractical to accurately measure the duration of soil saturation in the field because it takes repeated visits over a lengthy (several years) period of time. However, there has been a sufficient amount of research to support that the field indicators provided in the manual and supplementary guidance can be good measures of both the frequency and duration of soil saturation.

Given the requirement that inundation/saturation must be present for a certain portion of the growing season it is important to understand how the concept of growing season should be applied. The definition of growing season is: "The portion of the year when soil temperatures at 19.7 inches below the soil surface are higher than biological zero (41 degrees F). For ease of determination this period can be approximated by the number of frost-free days." The Washington State Wetland Identification and Delineation Manual contains additional guidance on how to determine the growing season.

(10) Indicators of wetland hydrology. Indicators of wetland hydrology may include, but are not necessarily limited to: Drainage patterns, drift lines, sediment deposition, watermarks, stream gage data and flood predictions, historic records, visual observation of saturated soils, and visual observation of inundation. Any of these indicators may be evidence of wetland hydrologic characteristics.

Methods for determining hydrologic indicators can be categorized according to the type of indicator. Recorded data include stream gage data, lake gage data, tidal gage data, flood predictions, and historical records. Use of these data is commonly limited to areas adjacent to streams or other similar areas. Recorded data usually provide both short-term and long-term information about frequency and duration of inundation, but contain little or no information about soil saturation, which must be gained from soil surveys or other similar sources. The remaining indicators require field observations. Field indicators are evidence of present or past hydrologic events (e.g., location and height of flooding). Indicators are listed in order of decreasing reliability. Although all are valid indicators, some are stronger indicators than others. When a decision is based on an indicator appearing in the lower portion of the list, re-evaluate the parameter to ensure that the proper decision was reached. Indicators for recorded data and field observations include:

(a) Recorded data. Stream gage data, lake gage data, tidal gage data, flood predictions, and historical data may be available from the following sources:

(i) Corps of Engineers (CE) district offices. Most CE Districts maintain stream, lake, and tidal gage records for major water bodies in their area. In addition, CE planning and design documents often contain valuable hydrologic information. For example, a General Design Memorandum (GDM) usually describes

flooding frequencies and durations for a project area. Furthermore, the extent of flooding within a project area is sometimes indicated in the GDM according to elevation (height) of certain flood frequencies (1-, 2-, 5-, 10-year, etc.).

(ii) U.S. Geological Survey (USGS). Stream and tidal gage data are available from the USGS offices throughout the Nation, and the latter are also available from the National Oceanic and Atmospheric Administration. CE Districts often have such records.

(iii) State, county, and local agencies. These agencies often have responsibility for flood control/relief and flood insurance.

(iv) Natural Resource Conservation Service Small Watershed Projects. Planning documents from this agency are often helpful, and can be obtained from the NRCS district office in the county.

(v) Planning documents of developers.

(b) Field data. The following field hydrologic indicators can be assessed quickly, and although some of them are not necessarily indicative of hydrologic events that occur only during the growing season, they do provide evidence that inundation and/or soil saturation has occurred:

CAUTION: Many delineators have made the mistake of assuming that the wettest conditions occur in the earliest part of the growing season - usually March and April. However, in some situations, the wettest time of the growing season may be later. This is especially true in areas that receive snowmelt run-off or irrigation water or are subject to tidal influence.

(i) Visual observation of inundation. The most obvious and revealing hydrologic indicator may be simply observing the areal extent of inundation. However, because seasonal conditions and recent weather conditions can contribute to surface water being present on a nonwetland site, both should be considered when applying this indicator.

(ii) Visual observation of soil saturation. Examination of this indicator requires digging a soil pit to a depth of 16 inches and observing the level at which water stands in the hole after sufficient time has been allowed for water to drain into the hole. The required time will vary depending on soil texture. In some cases, the upper level at which water is flowing into the pit can be observed by examining the wall of the hole. This level usually represents the depth to the water table. The depth to saturated soils will always be nearer the surface due to the capillary fringe. For soil saturation to impact vegetation, it must occur within a major portion of the root zone (usually within 12 inches of the surface) of the prevalent vegetation. The major portion of the root zone is that portion of the soil profile in which more than one half of the plant roots occur. *CAUTION: In some heavy clay soils, water may not rapidly accumulate in the hole even when the soil is saturated. If water is observed at the bottom of the hole but has not filled to the 12-inch depth, examine the sides of the hole and determine the shallowest depth at which water is entering the hole. When applying this indicator, the season of the year and preceding weather conditions as well the duration of saturation must be considered. NOTE: This indicator has caused confusion in relation to the hydrology criteria, which stipulates that saturation must be to the surface. If the water table (the level at which standing water is found in an unlined hole) is found within twelve inches of the soil surface in a nonsandy soil, one can assume that soil saturation occurs to the surface. For sandy soils, the water table must be within six inches of the soil surface. However, simply finding the water table at the appropriate depth* ***on one particular day,*** *does not necessarily confirm that saturation to the surface for the appropriate length of time does occur. Conversely, finding the water table below the appropriate depth* ***on one particular day,*** *does not confirm that saturation to the surface for the appropriate length of time does not occur.*

(iii) Watermarks. Watermarks are most common on woody vegetation. They occur as stains on bark or other fixed objects (e.g., bridge pillars, buildings, tree trunks, fences, etc.). When several watermarks are present, the highest reflects the maximum extent of recent inundation.

(iv) Drift lines. This indicator is most likely to be found adjacent to streams or other sources of water flow in wetlands, but also often occurs in tidal marshes. Evidence consists of deposition of debris in a line on the surface or debris entangled in above ground vegetation or other fixed objects. Debris usually consists of remnants of vegetation (branches, stems, and leaves), sediment, litter, and other waterborne materials deposited parallel: To the direction of water flow. Drift lines provide an indication of the minimum portion of the area inundated during a flooding event; the maximum level of inundation is generally at a higher elevation than that indicated by a drift line.

(v) Sediment deposits. Plants and other vertical objects often have thin layers, coatings, or depositions of mineral or organic matter on them after inundation. This evidence may remain for a considerable period before it is removed by precipitation or subsequent inundation. Sediment deposition on vegetation and other objects provides an indication of the minimum inundation level. When sediments are primarily

organic (e.g., fine organic material, algae), the detritus may become encrusted on or slightly above the soil surface after dewatering occurs.

(vi) Drainage patterns within wetlands. This indicator, which occurs primarily in wetlands adjacent to streams or in depressions with closed or restricted outlets and impervious subsoils, consists of surface evidence of drainage flow into or through an area that is restricted for a substantial duration. In some wetlands, this evidence may exist as a drainage pattern eroded into the soil, vegetative matter (debris) piled against thick vegetation or woody stems oriented perpendicular to the direction of water flow, or the absence of expected leaf litter. Scouring is often evident around roots of persistent vegetation. Debris may be deposited in or along the drainage pattern. *CAUTION: Drainage patterns also occur in upland areas after periods of considerable precipitation; therefore, topographic position must also be considered when applying this indicator.*

(vii) Oxidized rhizospheres surrounding living roots are acceptable hydrology indicators on a case-by-case basis and may be useful in ground water driven systems. Rhizospheres should also be reasonably abundant and within the upper 12 inches of the soil profile. Oxidized rhizospheres should be supported by other indicators of hydrology if hydrology evidence is weak. *Caution: Make sure that the oxidation is occurring along live roots/rhizomes and thus, that they are not relict.*

(viii) Local soil survey data - If you can field verify that the soil at your sampling site is a soil listed in the county soil survey or on the Washington State List of Hydric Soils, then the data in the soil survey referring to the flooding and/or high water table conditions for that soil can be accepted as valid for your site (assuming the site has not been effectively drained since the time it was mapped by the NRCS).

(ix) Water-stained leaves - Forested wetlands that are inundated at some time of the year will frequently have water stained leaves on the forest floor. These leaves are generally grayish or blackish in appearance, as a result of being underwater for significant periods. This indicator should be used with caution as water-stained leaves don't always indicate long-term inundation/saturation. It is important to compare the color of the leaves in the area presumed to be wetland with leaves of the same species in an adjacent area that is clearly upland. There should be a distinct difference in the color and texture of the leaves.

(x) FAC neutral test - In areas where hydrology evidence is weak or lacking, the FAC neutral test may be employed to corroborate the presence of sufficient hydrology. Apply as follows: Compare the number of dominants that are FACW and OBL with the number of dominants that are FACU and UPL (ignore the "neutral" FAC dominants). If there are more dominants that are FACW or wetter than there are dominants that are FACU or drier, then one can infer that the plant community is reflecting the presence of wetland hydrology. If there is a tie, compare the number of FAC+ and FAC- to see if there is a difference. If there is still a tie between the numbers of dominants, examine the nondominant species to determine if they provide an indication of how strongly hydrophytic the vegetation is. Any use of nondominants should be clearly documented and explained.

(xi) Other - Explain and provide rationale for use.

(11) Atypical situations. When a determination is made that positive indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology could not be found due to effects of recent human activities or natural events, it is necessary to employ different methods of determining the presence of indicators for hydrology, soils or vegetation. The term recent refers to the period of time since legal jurisdiction of an applicable law or regulation took effect.

When any of the three types of situations described below occurs, application of normal methods will lead to the conclusion that the area is not a wetland because positive wetland indicators for at least one of the three parameters will be absent. Therefore, apply procedures described in Part IV, Section F of the 1987 Corps of Engineers Wetland Delineation Manual or the Washington State Wetland Identification and Delineation Manual (as appropriate) to determine whether positive indicators of hydrophytic vegetation, hydric soils, and/or wetland hydrology existed prior to alteration of the area.

This section is applicable to delineations made in the following types of situations:

(a) Unauthorized activities. Unauthorized discharges requiring enforcement actions may result in removal or covering of indicators of one or more wetland parameters. Examples include, but are not limited to:

(i) Alteration or removal of vegetation;

(ii) Placement of dredged or fill material over hydric soils; and/or

(iii) Construction of levees, drainage systems, or dams that significantly alter the area hydrology. *NOTE: This section should not be used for activities that have been previously authorized or those that are exempted from regulation.*

(b) Natural events. Naturally occurring events may result in either creation or alteration of wetlands. For example, recent beaver dams may impound water, thereby resulting in a shift of hydrology and vegetation to wetlands. However, hydric soil indicators may not have developed due to insufficient time having passed to allow their development. Fire, avalanches, volcanic activity, and changing river courses are other examples. *NOTE: It is necessary to determine whether alterations to an area have resulted in changes that are now the "normal circumstances."* The relative permanence of the change and whether the area is now functioning as a wetland must be considered.

(c) Human-induced wetlands. These are wetlands that have been purposely or incidentally created by human activities, but in which wetland indicators of one or more parameters are absent. For example, road construction may have resulted in impoundment of water in an area that previously was nonwetland, thereby affecting hydrophytic vegetation and wetland hydrology in the area. However, the area may lack hydric soil indicators. *NOTE: This is not intended to bring into jurisdiction those human-made wetlands that are exempted under agency regulations or policy.* It is also important to consider whether the man-induced changes are now the "normal circumstances" for the area. Both the relative permanence of the change and the functioning of the area as a wetland are implied.

(12) Problem areas. There are certain wetland types and/or conditions that may make application of indicators of one or more parameters difficult, at least at certain times of the year. These are not considered to be atypical situations. Instead, they are wetland types in which wetland indicators of one or more parameters may be periodically lacking due to normal environmental conditions or seasonal or annual variations in environmental conditions that result from causes other than human activities or catastrophic natural events. When one of these wetland types is encountered, the methods described in Part IV, Section G of the 1987 Manual or the state manual should be used.

(13) Types of problem areas. Representative examples of potential problem areas, types of variations that occur, and their effects on wetland indicators are presented in the following subparagraphs. Similar situations may sometimes occur in other wetland types. *Note: This section is not intended to bring nonwetland areas having wetland indicators of two, but not all three, parameters into jurisdiction. This list is not intended to be limiting.*

(a) Wetlands on slopes (seeps) and other glacial features. Slope wetlands can occur in certain glaciated areas in which thin soils cover relatively impermeable unsorted glacial material or till or in which layers of sorted glacial material have different hydraulic conditions that produce a broad zone of ground water seepage. Such areas are seldom, if ever, flooded, but downslope ground water movement keeps the soils saturated for a sufficient portion of the growing season to produce anaerobic and reducing soil conditions. This fosters development of hydric soil characteristics and selects for hydrophytic vegetation. Indicators of wetland hydrology may be lacking during the drier portion of the growing season.

(b) Seasonal wetlands. In Washington, some depression areas have wetland indicators of all three parameters during the wetter portion of the growing season, but normally lack wetland indicators of hydrology and/or vegetation during the drier portion of the growing season. For example, obligate and facultative wetland plant species normally are dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. Also, these areas may be inundated during the wetter portion of the growing season, but wetland hydrology indicators may be totally lacking during the drier portion of the growing season. It is important to establish that an area truly is a water body. Water in a depression normally must be sufficiently persistent to exhibit an ordinary high-water mark or the presence of wetland characteristics before it can be considered as wetland potentially subject to jurisdiction. The determination that an area exhibits wetland characteristics for a sufficient portion of the growing season to qualify as a wetland must be made on a case-by-case basis. Such determinations should consider the respective length of time that the area exhibits upland and wetland characteristics, and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its history, vegetation, soil, drainage characteristics, uses to which it has been subjected, and weather or hydrologic records. This situation is common in eastern Washington and parts of western Washington where precipitation is highly seasonal and/or prolonged droughts occur frequently. It is important to become familiar with the types of wetlands found in these areas. In some cases, it may be necessary to withhold making a final wetland

determination until a site is examined during the wettest part of the growing season. Consultation with other experienced delineators may be helpful as well.

(c) Vernal wetlands - Although these systems are usually associated with California, Washington does have vernal wetlands, particularly in the region around Spokane. These wetlands are a distinct type of seasonal wetland described above. The hydrology in these wetlands is driven by winter and early spring rain and snowmelt and may be totally lacking by early summer. A wetland plant community grows and reproduces in spring in response to the wet conditions and is replaced by an upland plant community by summer. Attempts to delineate these wetlands in summer or fall may result in a false negative conclusion. In addition, during periods of extended drought, these wetlands may remain dry for several years.

(d) Vegetated flats. In both coastal and interior areas of Washington, vegetated flats are often dominated by annual species that are categorized as OBL. Application of normal sampling procedures during the growing season will clearly result in a positive wetland determination. However, these areas will appear to be unvegetated mudflats when examined during the nongrowing season, and the area would not qualify at that time as a wetland due to an apparent lack of vegetation.

(e) Mollisols (prairie and steppe soils) - Mollisols are dark colored, base-rich soils. They are common in grassland areas of the state, especially in eastern Washington and the prairies of the south Puget Sound basin. These soils typically have deep, dark topsoil layers (mollic epipedons) and low chroma matrix colors to considerable depths. They are rich in organic matter due largely to the vegetation (deep roots) and reworking of the soil and organic matter by earthworms, ants, moles, and rodents. The low chroma colors of mollisols are not necessarily due to prolonged saturation, so be particularly careful in making wetland determinations in these soils. Become familiar with the characteristics of mollisols with aquic moisture regimes, and be able to recognize these from nonhydric mollisols.

(f) Entisols (floodplain and sandy soils) - Entisols are usually young or recently formed soils that have little or no evidence of pedogenically developed horizons. These soils are typical of floodplains throughout Washington, but are also found in glacial outwash plains, along tidal waters, and in other areas. They include sandy soils of riverine islands, bars, and banks and finer-textured soils of floodplain terraces. Wet entisols have an aquic or peraquic moisture regime and are considered wetland soils. Some entisols are easily recognized as hydric soils such as the sulfaquents of tidal salt marshes, whereas others pose problems because they do not possess typical hydric soil field indicators. Wet sandy entisols (with loamy fine sand and coarser textures in horizons within 20 inches of the surface) may lack sufficient organic matter and clay to develop hydric soil colors. When these soils have a hue between 10YR and 10Y and distinct or prominent mottles present, a chroma of 3 or less is permitted to identify the soil as hydric (i.e., an aquic moisture regime). Also, hydrologic data showing that NTCHS criteria # 3 or # 4 are met are sufficient to verify these soils as hydric.

(g) Red parent material and volcanic ash soils - Hydric mineral soil derived from red parent materials (e.g., weathered clays, Triassic sandstones, and Triassic shales) may lack the low chroma colors characteristic of most hydric mineral soils. In these soils, the hue is redder than 10YR because of parent materials that remain red after citrate-dithionite extraction, so the low chroma requirement for hydric soil is waived. Additionally, some hydric soils in Washington that are influenced by volcanic ash or other volcanic material may not exhibit hydric soil indicators.

(h) Spodosols (evergreen forest soils) - These soils are usually associated with coniferous forests. Spodosols have a gray eluvial E-horizon overlying a diagnostic spodic horizon of accumulated (sometimes weakly cemented) organic matter and aluminum. A process called podzolization is responsible for creating these two soil layers. Organic acids from the leaf litter on the soil surface are moved downward through the soil with rainfall, cleaning the sand grains in the first horizon then coating the sand grains with organic matter and iron oxides in the second layer. Certain vegetation produces organic acids that speed podzolization including western hemlock (*Tsuga heterophylla),* spruces (*Picea* spp.), pine (*Pinus* spp.), larches (*Larix* spp.), and oaks (*Quercus* spp.) (Buol, *et al,* 1980). To the untrained observer, the gray leached layer may be mistaken as a field indicator of hydric soil, but if one looks below the spodic horizon the brighter matrix colors often distinguish nonhydric spodosols from hydric ones. The wet spodosols (formerly called "ground water podzolic soils") usually have thick dark surface horizons, dull gray E-horizons, and low chroma subsoils.

(i) Interdunal swale wetlands - Along the Washington coastline, seasonally wet swales supporting hydrophytic vegetation are located within sand dune complexes on barrier islands and beaches. Some of these swales are inundated or saturated to the surface for considerable periods during the growing season, while others are wet for only the early part of the season. In some cases, swales may be flooded irregularly

by the tides. These wetlands have sandy soils that generally lack field indicators of hydric soil. In addition, indicators of wetland hydrology may be absent during the drier part of the growing season. Consequently, these wetlands may be difficult to identify.

(j) Vegetated river bars and adjacent flats - Along streams, particularly in arid and semiarid parts of the state, some river bars and flats may be vegetated by FACU species while others may be colonized by wetter species. If these areas are frequently inundated for ≥12.5% of the growing season, they are wetlands. The soils often do not reflect the characteristic field indicators of hydric soils, however, and thereby pose delineation problems.

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